

Claims

1. An organic electroluminescent device comprising:
a cathode, an anode, and an emitting layer interposed
5 between the cathode and the anode,
at least a part of the anode in contact with the emitting
layer containing at least one element selected from lanthanum,
cerium, neodymium, samarium, and europium, and at least one
element selected from chromium, tungsten, tantalum, niobium,
10 silver, palladium, copper, nickel, cobalt, molybdenum,
platinum, and silicon.
2. The organic electroluminescent device according to claim
1, wherein the total concentration of the at least one element
15 selected from lanthanum, cerium, neodymium, samarium, and
europium is 0.1 to 50 wt%.
3. The organic electroluminescent device according to claim
1, wherein the part of the anode in contact with the emitting
20 layer contains cerium.
4. The organic electroluminescent device according to claim
1, wherein the part of the anode in contact with the emitting
layer has a work function of 5.0 eV or more.
- 25 5. A conductive multilayer body comprising:
an insulative transparent substrate and a transparent

conductive film formed on the transparent substrate,

the transparent conductive film containing an oxide containing at least cerium (Ce),

wherein, in a graph showing binding energy of an electron present in a cerium 3d orbit on the surface of the transparent conductive film measured by X-ray photoelectron spectroscopy, when SA represents the total peak area of the binding energy between 877 eV and 922 eV, and SB represents the total peak area of the binding energy between 914 eV and 920 eV, SB/SA which represents an area ratio of SB to SA satisfies the following expression (1).

$$SB/SA < 0.13 \quad (1)$$

6. The conductive multilayer body according to claim 5, wherein the transparent conductive film contains at least one metal element selected from indium (In), tin (Sn), Zinc (Zn), zirconium (Zr), and gallium (Ga), cerium (Ce), and oxygen (O).

7. A method for producing the conductive multilayer body of claim 5 or 6, comprising:

forming the transparent conductive film by sputtering at a partial pressure of oxygen of 0.1 Pa or less in a sputtering atmosphere.

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8. An electrode substrate for an organic electroluminescent device comprising:

the conductive multilayer body of claim 5 or 6, and
a metal conductor formed on the conductive multilayer
body, the transparent conductive film driving an organic
electroluminescent layer.

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9. An organic electroluminescent device comprising, :
the electrode substrate of claim 8, and
an organic electroluminescent layer formed on the
electrode substrate.

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10. An organic electroluminescent device comprising, :
the conductive multilayer body of claim 5 or 6, and
an organic electroluminescent layer formed on the
conductive multilayer body.

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11. An electroluminescent device comprising an anode layer,
an organic emitting layer, and a cathode layer stacked in this
order,

the cathode layer containing at least a first metal and
a second metal,

the standard oxidation-reduction potential (E(A)) of the
first metal at 25°C being -1.7 (V) or more, and

the standard oxidation-reduction potential (E(B)) of the
second metal at 25°C satisfying the following expression (2).

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$$E(A) - 1.1 \leq E(B) \quad (2)$$

12. An electroluminescent device comprising an anode layer, an organic emitting layer, a cathode layer, and a transparent conductive layer stacked in this order,

the cathode layer containing at least a first metal and
5 a second metal,

the standard oxidation-reduction potential ($E(A)$) of the first metal at 25°C being -1.7 (V) or more, and

the standard oxidation-reduction potential ($E(B)$) of the second metal at 25°C satisfying the following expression (2).

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$$E(A) - 1.1 \leq E(B) \quad (2)$$

13. The organic electroluminescent device according to claim 11 or 12, wherein the main component of the cathode layer is
15 the first metal.

14. The organic electroluminescent device according to claim 11 or 12, wherein the first metal is a metal selected from Al, Cr, Ta, Zn, Fe, Ti, In, Co, Ni, Ge, Cu, Re, Ru, Ag, Pd, Pt, and
20 Au.

15. The organic electroluminescent device according to claim 11 or 12, wherein the second metal is a metal selected from Bi, Te, Sn, V, Mo, Nd, Nb, and Zr.

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16. The organic electroluminescent device according to claim 11 or 12, wherein the cathode layer contains 0.1 wt% to 5.0 wt%

of an alkali metal or an alkaline earth metal.

17. The organic electroluminescent device according to claim
11 or 12, wherein the cathode layer has an optical transparency
5 at a wavelength of 380 nm to 780 nm of 10% or more.

18. The organic electroluminescent device according to claim
11 or 12, wherein the first metal is Ag.

10 19. A display comprising the organic electroluminescent
device according to any one of claims 1 to 4 and 9 to 12.